Sept. 26, 1933. F. WILLSON ET AL 1,928,238

HELMET

Filed Oct. 12, 1932

Fig. 6

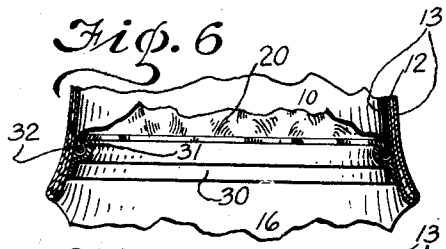


Fig. 7

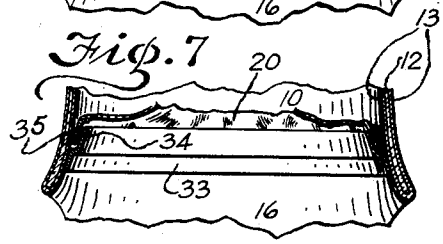


Fig. 3

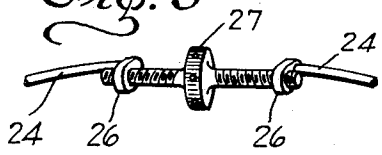


Fig. 1

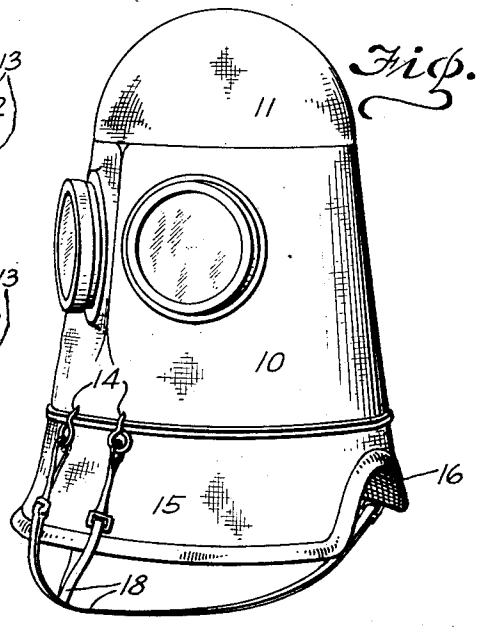


Fig. 4

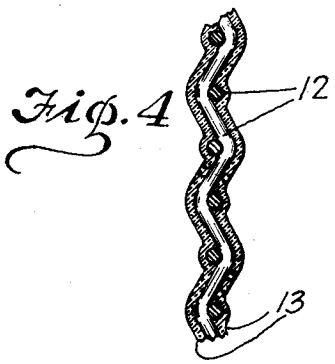


Fig. 2

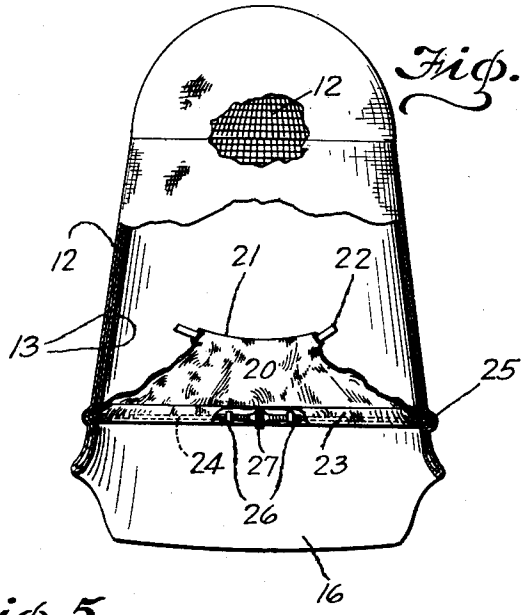
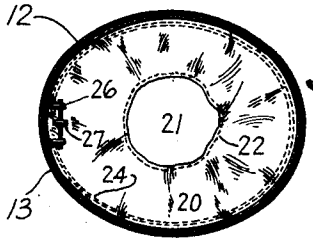


Fig. 5



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UNITED STATES PATENT OFFICE

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HELMET

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Application October 12, 1932. Serial No. 637,406

11 Claims. (Cl. 2—205)

This invention relates to protective helmets and particularly to that type of helmet which is worn by persons engaged in industrial occupations requiring protection against dust or flying particles such as abrasives employed in cleaning castings etc.

Helmets of this type ordinarily have an exterior surface of leather or the like which under the impact of rebounding abrasive particles becomes worn and oftentimes ripped and torn. Helmets have also been made of sheet metal in an attempt to reduce such destruction of the helmets but when so made are cumbersome and heavy and there is excessive reverberation within the helmet resulting from contact by rebounding abrasives. It is an object of the invention to provide a helmet of light construction in which wear by rebounding particles is substantially reduced and in which reverberation within the helmet is materially lessened.

Helmets of the type under consideration ordinarily are provided with collar like rings of flexible material, such as lamb's wool or fur, secured interiorly and circumferentially of the helmet and adapted to fit closely about the neck of the wearer to prevent the escape of air or oxygen supplied for breathing and to assist in excluding dust. In donning and removing a helmet the latter is drawn over the head of the wearer which thus contacts the collar and such contact, as well as contact of the collar against other portions of the wearer's body, results in the collar becoming soiled and unsanitary. Heretofore, such collars have been permanently attached to the helmet and when soiled have usually remained in such condition as their cleansing could not readily be accomplished in situ and their removal for cleansing is difficult if not impracticable. It is desirable that such collars may be cleansed and therefore it is an object of our invention to provide a collar which may be readily removed from and replaced in the helmet.

Other objects and advantages of the invention will be apparent upon consideration of the following description and appended claims when read in conjunction with the drawing in which:

Figure 1 is a perspective view of a helmet embodying the invention;

Figure 2 is a partial sectional view illustrating the attaching means for the collar.

Figure 3 is an enlarged view of the ends of an attaching device associated with the afore-mentioned collar;

Figure 4 is an enlarged and exaggerated sectional view through the wall of the helmet to illustrate its integral and homogeneous construction;

Figure 5 is a cross-sectional view taken through the lower part of the helmet and shows the annular neck-encircling collar; and

Figures 6 and 7 are fragmentary sectional views showing other forms of attaching devices for the collar.

In accordance with our invention the hood-like helmet comprises a metallic form encased within a shell of low-abrading material such as rubber or a suitable composition. In the embodiment described the helmet form consists of a substantially cylindrical casing 10 and a dome or top-piece 11, both of metallic mesh work 12, as indicated in Figs. 2 and 4, enclosed within a low-abrading shell 13 formed by depositing rubber upon the mesh work to coat the surfaces and fill the interstices of the foraminous form, thereby providing an integral and homogeneous hood. The top-piece 11 and strap attaching fittings 14, lens-fitting etc. are secured to the casing 10 as by welding and also become encased within the rubber or composition shell.

The lower end of the helmet has front and rear extensions 15, 16, with places for the shoulders cut out between them and in order that the lower portion of the helmet may conform more closely to the body of the wearer for excluding dust a strip of fibrous material such as lamb's wool may be secured to the lower edges of the casing. Straps 18 attached to the fittings 14 are provided for drawing the helmet tightly against the body of the wearer.

To prevent excessive escape from the helmet of air or oxygen supplied to the wearer for breathing and also to assist in excluding dust a neck encircling collar 20 is provided. The collar 20 comprises an annulus of suitable flexible fibrous material, such as fur or lamb's wool, and adjacent the opening 21 thereof is provided with an elastic member 22 enabling the helmet to be put on or taken off without difficulty and adapted to draw the collar tightly about the neck of the wearer. At or adjacent the periphery of the annular collar a hem 23 is formed which acts as a keeper for a split ring 24 adapted to be expanded into a groove 25 formed circumferentially of the helmet casing for detachably securing the collar 20 thereto. In the arrangement shown in Figs. 2 and 3 the opposed ends of the rings are provided with lugs 26 projecting through an opening in hem 23 and having reversely threaded bores receiving a threaded screw member 27 operable to expand the ring for engagement with the helmet groove or to contract it to enable ready detachment of the collar from the helmet.

It may be noted that inasmuch as the retaining ring 24 binds the peripheral edge of collar 20 against the groove 25 in the helmet wall a seal is thus provided at the abutting portions of the collar and hood between the breathing chamber and the lower part of the helmet which, in conjunction with the drawing of the collar about the wearer's neck by member 22, substantially pre-

vents undesired escape of breathing air or oxygen from the helmet. Other forms of attaching devices may be provided in which a plurality of complementary cooperating fasteners are mounted on the hood interiorly of the helmet and on the collar. However, in the embodiments illustrated in Figures 6 and 7 the above noted sealing function is also retained, preferably by making the attaching devices on the helmet and hood coextensive with each other and the interior circumference of the helmet at the point of attachment of the collar.

In the embodiment illustrated in Figure 6, a circular band 30, preferably metallic, is secured adjacent one circumferential edge to the wall of the helmet interiorly thereof. A portion 31 of band 30 is spaced from the adjacent wall of the helmet to receive a retaining ring 32 carried by collar 20 and the band 30 is also preferably resilient so as to securely hold the ring 32 against the helmet for attaching the collar.

In the embodiment illustrated in Figure 7, a circular band 33 is fastened circumferentially to the helmet and has a portion 34 spaced from the helmet wall to form a pocket in which a similar band 35 secured to or adjacent the exterior peripheral edge of the collar may be inserted to attach the collar. The bands 34, 35 may be of fibrous material such as lamb's wool or fur arranged with the hairs or wool on their contacting portions so that the hairs become interengaged on attaching the collar to the helmet, thus accentuating the seal resulting from their coextensive cooperating engagement.

From the above description it may be seen that the helmet is of light construction and its exposed surfaces are less susceptible to wear or destruction by abrasives than in previous constructions. Further, inasmuch as the helmet coating is of rubber, or a composition, and the various fittings are covered thereby the helmet is without joints or seams and in this respect is air tight.

The arrangement for detachably mounting the neck-encircling collar renders it possible to easily and quickly remove the latter for cleaning and thereby maintain the helmet sanitary. This also permits the use of a single helmet by several workmen each of whom may have his own neck collar thus further improving working conditions from a sanitary view point.

Although illustrative embodiments of the invention have been described in detail there are many changes and variations which may be made without departing from the spirit and principles of the invention and therefore it is intended to include all such changes and variations within the scope of the appended claims.

What we claim is:

1. A head protecting helmet having a head enclosing hood provided with a neck encircling collar; collar retaining means extending circumferentially and interiorly of said hood; and means carried by said collar and detachably engageable with said retaining means for securing said collar to said hood.

2. In a head protecting helmet comprising a head enclosing hood provided with a neck encircling collar; means for detachably securing said collar to said hood comprising, means secured to the interior of said hood and spaced in part from the interior surface of the wall thereof; and means carried by said collar and engageable with said means for attaching said collar to said hood.

3. In a head protecting helmet comprising a head enclosing hood provided with a neck encircling collar; means for detachably securing said collar to said hood comprising a circular attaching band secured interiorly of said hood and spaced in part therefrom, and a retaining member carried by said collar and insertable between said hood and the spaced portion of said band for attaching said collar to said hood.

4. In a head protecting helmet comprising a head enclosing hood provided with a neck encircling collar; means for detachably securing said collar to said hood comprising resilient means secured to the interior of said hood and spaced in part therefrom, and means carried by said collar and engageable between said resilient means and said hood for attaching said collar thereto.

5. In a head protecting helmet comprising a head enclosing hood provided with a neck encircling collar; means for detachably securing said collar to said hood comprising a retaining ring carried by said collar, and a resilient attaching band secured interiorly and circumferentially of said hood and spaced in part therefrom to receive said retaining ring and bind the latter against said hood to attach said collar thereto.

6. In a head protecting helmet comprising a substantially cylindrical head enclosing hood provided with a flexible annular neck encircling collar having an exterior periphery substantially equal to the interior circumference of said hood; means for detachably securing said collar to said hood comprising, cooperating attaching members carried by said hood and collar, said members being coextensive with the abutting portions of said hood and collar to form a seal therebetween.

7. A head protecting helmet comprising a substantially cylindrical head enclosing hood having a circumferential groove formed in the interior wall thereof; an annular neck encircling member; and means associated with the exterior peripheral edge of said member and cooperating with said groove for securing said member to said hood.

8. A head protecting helmet comprising a substantially cylindrical head enclosing hood having a circumferential groove formed in the interior wall thereof; a flexible, annular neck encircling member having a hem formed therein; and means in said hem cooperating with said groove for securing said member to said hood.

9. A head protecting helmet comprising a substantially cylindrical head enclosing hood having a circumferential groove formed in the interior wall thereof; an annular neck encircling member of flexible material having a hem formed therein; and an expansible ring in said hem and adapted to seat in said groove for detachably securing said member to said hood.

10. A head protecting helmet comprising a substantially cylindrical head enclosing hood having a circumferential groove formed in the interior wall thereof; an annular neck encircling member of flexible material; a hem adjacent the exterior edge of said member; an expansible ring in said hem adapted to seat in said groove; and means associated with said ring for expanding the latter to securely fasten said member to said hood.

11. A head protecting helmet comprising a substantially cylindrical metallic head-enclosing member; a substantially dome-shaped metallic top piece welded to said member; and coatings of low-abrading material on the exterior surfaces of said top piece and member.

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